UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/589,299	06/07/2000	Mark B. Spitzer	MIOPT-005XX	9186

207 7590 08/14/2003

WEINGARTEN, SCHURGIN, GAGNEBIN & LEBOVICI LLP
TEN POST OFFICE SQUARE
BOSTON, MA 02109

EXAMINER	
MOYER, MICHAEL J	

ART UNIT	PAPER NUMBER
2675	28

DATE MAILED: 08/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/589,299	SPITZER, MARK B.	
	Examiner	Art Unit	
	Michael J. Moyer	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 July 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment (RCE)

1. The amendment filed on 28 July 2003 has been considered. Before claims 1-44 were pending, now claims 1-44 are still pending. Claims 1, 13 and 21 have been amended.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-7, 9-11, 28-29 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji et al. (hereinafter "Amafuji") US 6,292,158 B1 in view of Rallison et al. (hereinafter "Rallison"), US 5,949,583.

As pertaining to claim 1, Amafuji discloses a compact display device 201 for transmitting an image to a user's eye, the display device comprising: a head-mountable support fixture 203 comprising an elongated member having a first end and a second end 204c; a projection system 204 including a display 204a operative to provide an image, the support fixture 204c attached at the first end to the projection system 204; and an eyepiece assembly 204b attached to the second end of the support fixture 204c; wherein the support fixture 204c maintains the projection system 204 and the eyepiece assembly 204b in alignment along an optical path through free space between the projection system 204 and the eyepiece assembly 204b, with the projection system 204 disposed to transmit the image on the optical path and the eyepiece assembly 204b disposed to receive the image from the projection system 204 and to direct the image to the user's eye 6 (Fig. 5).

As pertaining to claim 1, Amafuji does not disclose an axial optical system.

As pertaining to claim 1, Rallison discloses a head mounted display system in which on-axis or axial system is used (col. 2, lines 8-16; col. 3 lines 7-20).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the on-axis or axial system of Rallison with Amafuji.

The suggestion/motivation for doing so would have been to provide HMD that produces virtual images with a minimal amount of aberrations, therefore allowing for better image quality and light efficiency.

As pertaining to claim 2, Amafuji teaches the device of claim 1, wherein the support fixture comprises a post oriented off the optical path (Fig. 5). Claim 2 is dependent on claim 1 and is rejected on the same basis and what is stated above.

As pertaining to claim 3, Amafuji teaches the device of claim 2, wherein the post is curved Fig. 5). Claim 3 is dependent on claims 1 and 2 and is rejected on the same basis and what is stated above.

As pertaining to claim 4, Amafuji teaches the device of claim 1, wherein the display comprises a liquid crystal display 235, an electroluminescent display, a field emission display, or a cathode ray tube (col. 10, lines 43-54; Fig. 6). Claim 4 is dependent on claim 1 and is rejected on the same basis and what is stated above.

As pertaining to claim 5, Amafuji teaches the device of claim 1, wherein the projection system further comprises an illumination source 232 (col. 10, lines 43-54; Fig. 6). Claim 5 is dependent on claim 1 and is rejected on the same basis and what is stated above.

As pertaining to claim 6, Amafuji teaches the device of claim 1, wherein the eyepiece assembly 204b comprises a reflecting surface oriented to direct the image to the user's eye and a lens (col. 10, lines 1-2; col. 11, lines 1-7; Fig. 5-6). Furthermore, Rallison teaches a reflecting

surface oriented to direct the image to the user's eye and a lens (figs. 1-2 and 5-6). Claim 6 is dependent on claim 1 and is rejected on the same basis and what is stated above.

As pertaining to claim 7, Amafuji teaches the device of claim 1, wherein the eyepiece assembly allows passage of ambient light to the user's eye (Fig. 5). Furthermore, Rallison teaches the allowance of ambient light to the user's eye (col. 2, lines 63-67 and col. 3, lines 1-5). Claim 7 is dependent on claim 1 and is rejected on the same basis and what is stated above.

As pertaining to claim 9, Amafuji teaches the device of claim 1, wherein the projection system further comprises a reflecting surface 232 oriented to direct light from the display onto the optical path through free space (col. 10, lines 43-52; Fig. 6). Claim 9 is dependent on claim 1 and is rejected on the same basis and what is stated above.

As pertaining to claim 10, Amafuji teaches the device of claim 1, wherein the projection system further comprises a diffusion panel 236, which can be construed as a lens because it is used for uniforming unevenness in the light from the back light 232 (col. 10, lines 43-52; Fig. 6). Claim 10 is dependent of claim 1 and is rejected on the same basis and what is stated above.

As pertaining to claim 11, Amafuji teaches the device of claim 1, wherein the projection system is disposed within a housing 204, and the housing is attached to the support fixture at the first end (Fig. 5). Claim 11 is dependent on claim 1 and is rejected on the same basis and what is stated above.

As pertaining to claim 28, Amafuji teaches the device of claim 1, further comprising a housing, the projection system disposed within the housing, circuits and wiring in electrical communication with the projection system disposed within the housing, and the support fixture attached to the housing (Fig. 5-6). Claim 28 dependent on claim 1 and is rejected on the same basis and what is stated above.

As pertaining to claim 29, Amafuji teaches the device of claim 28, further comprising a mounting device configured to mount the housing to a headband 203 (Fig. 5). Claim 29 is dependent on claims 1 and 28 and is rejected on the same basis and what is stated above.

As pertaining to claim 37, Amafuji teaches a computer in communication with the display device of claim 1 (col. 1, lines 4-7). Claim 37 is dependent on claim 1 and is rejected on the same basis and what is stated above.

3. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji and Rallison, as applied to claim 1 above in view of Taniguchi et al. (hereinafter "Taniguchi"), US 6,023,253.

As pertaining to claim 8, Amafuji and Rallison disclose what has been previously stated above. Rallison does suggest that his invention can include some of the limitations (col. 8, lines 12-67 and col. 9, lines 1-11).

As pertaining to claim 8, Amafuji and Rallison do not disclose the eyepiece assembly comprising a polarization beam-splitter coating, a quarterwave plate, and a focusing mirror arranged so that polarized light from the projection system passes the beam splitter coating and the quarterwave plate and is reflected from the focusing mirror to pass in the opposite direction through the quarterwave plate and is reflected from the beam-splitter coating toward the user's eye.

As pertaining to claim 8, Taniguchi discloses an eyepiece assembly comprising eyepiece assembly comprising polarization beam splitter 4, a quarterwave plate 18, a concave half mirror 19, which can be construed as the focusing mirror because it is used to reflect the light from the quarter wave plate to pass through the opposite direction through the quarterwave plate and is reflected from the beam splitter toward the user's eye 9 (col. 11, lines 43-62; Fig. 9).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the eyepiece assembly of Taniguchi with the eyepiece of Amafuji and Rallison.

The suggestion/motivation for doing so would have been to provide a better eyepiece assembly that allows for increased or improved observation in which there is a higher luminance and definition of the picture being observed by the user. Claim 8 is dependent on claim 1 and is rejected on the same basis and what is stated above.

4. **Claims 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji and Rallison as applied to claim 1 above, in view of Ronzani et al. (hereinafter "Ronzani"), US 5,844,656.

As pertaining to claim 12, Amafuji and Rallison disclose what has previously been stated, see claim 1 for rejection.

As pertaining to claim 12, they do not disclose the eyepiece assembly is disposed within a curved housing.

As pertaining to claim 12, Ronzani discloses a HMD display in which the eyepiece assembly is hollow and spherical and therefore curved (figs. 1-9).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the curved eyepiece assembly of Ronzani with that of Amafuji and Rallison.

The suggestion/motivation for doing so would have been to provide for a better eyepiece assembly which can be encased or housed to allow for a better image to be produce without any outside distractions or interferences, i.e. wind, rain, snow etc. Claim 12 is dependent on claim 1 and is rejected on the same basis and what is stated above.

5. **Claims 13, 15, 19, 28-29 and 40** are rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji and Rallison as applied to claim 1 above, in view of Ronzani et al. (hereinafter "Ronzani"), US 5,844,656 and in further view of Robertson et al. (hereinafter "Robertson"), US 6,034,653.

As pertaining to claim 13, Amafuji, Rallison and Ronzani disclose what has previously been stated above (see claims 1 and 12).

As pertaining to claim 13, they do not disclose the eyepiece assembly being transparent.

As pertaining to claims 13, Robertson discloses as shown in fig. 15, an HMD. Pod 330 can be made of a display 332 and transparent window 335. This will allow the pod to become see-through type (col. 8, lines 12-20). If one side of the pod has a transparent window, it would be obvious that the pod can be made to be entirely of a transparent material or half or to what is desired. The assembly would be similar to the eyepiece assembly in question because it allows the user to view an image in front of their eye.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the transparent cube or assembly of Robertson with the eyepiece assembly of Amafuji, Rallison and Ronzani.

The suggestion/motivation for doing so would have been to provide a more efficient eyepiece that allows the user to see not only the image being viewed but also the surrounding of the user. Furthermore, outside ambient light can now used to further help the process of the image. Also, this assembly may help the user avoid eyestrain because one eye does not have to compensate for the other eye not being used because now both eyes are able to see the outside environment or surroundings while the one eye is also viewing an image.

As pertaining to claim 15, Ronzani discloses wherein a further lens is disposed within the spherical housing (figs. 1-9). Claim 15 is dependent on claims 13-14 and is rejected on the same basis and what is stated above.

As pertaining to claim 19, Amafuji discloses the device of claim 13, wherein the eyepiece assembly allows passage of ambient light to the user's eye (Fig. 5). Furthermore, Rallison teaches the allowance of ambient light to the user's eye (col. 2, lines 63-67 and col. 3, lines 1-5). Also, Robertson discloses an assembly for producing a visual image, in which the assembly or pod uses a transparent window (fig. 15; col. 8, lines 12-20). This assembly or pod would also allow ambient light to transmit or pass through the assembly. Claim 19 is dependent on claim 13 is rejected on the same basis and what is stated above.

As pertaining to claim 28, Amafuji teaches the device of claim 13, further comprising a housing, the projection system disposed within the housing, circuits and wiring in electrical communication with the projection system disposed within the housing, and the support fixture attached to the housing (Fig. 5-6). Claim 28 dependent on claim 13 and is rejected on the same basis and what is stated above.

As pertaining to claim 29, Amafuji teaches the device of claim 28, further comprising a mounting device configured to mount the housing to a headband 203 (Fig. 5). Claim 29 is dependent on claims 13 and 28 and is rejected on the same basis and what is stated above.

As pertaining to claim 41, Amafuji teaches a computer in communication with the display device of claim 13 (col. 1, lines 4-7). Claim 40 is dependent on claim 13 and is rejected on the same basis and what is stated above.

6. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji, Rallison, Ronzani and Robertson as applied to claim 13 above, and further in view of Taniguchi et al. (hereinafter "Taniguchi"), US 6,023,253.

As pertaining to claim 14, Amafuji, Rallison, Ronzani and Robertson disclose what has been previously stated above. Rallison does suggest that his invention can include some of the limitations (col. 8, lines 12-67 and col. 9, lines 1-11).

As pertaining to claim 14, they do not disclose the eyepiece assembly comprising a polarization beam-splitter coating, a quarterwave plate, and a focusing mirror arranged so that polarized light from the projection system passes the beam splitter coating and the quarterwave plate and is reflected from the focusing mirror to pass in the opposite direction through the quarterwave plate and is reflected from the beam-splitter coating toward the user's eye.

As pertaining to claim 14, Taniguchi discloses an eyepiece assembly comprising eyepiece assembly comprising polarization beam splitter 4, a quarterwave plate 18, a concave half mirror 19, which can be construed as the focusing mirror because it is used to reflect the light from the quarter wave plate to pass through the opposite direction through the quarterwave plate and is reflected from the beam splitter toward the user's eye 9 (col. 11, lines 43-62; Fig. 9).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the eyepiece assembly of Taniguchi with the eyepiece of Amafuji, Rallison, Ronzani and Robertson.

The suggestion/motivation for doing so would have been to provide a better eyepiece assembly that allows for increased or improved observation in which there is a higher luminance and definition of the picture being observed by the user. Claim 14 is dependent on claim 13 and is rejected on the same basis and what is stated above.

7, **Claims 16-18, 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji, Rallison, Ronzani and Robertson as applied to claim 13 or 14 above, and further in view of Fan et al. (hereinafter "Fan"), US 5,815,126.

As pertaining to claim 16, Amafuji, Rallison, Ronzani and Robertson disclose

what has previously been stated above.

As pertaining to claim 16, they do not disclose the eyepiece assembly further comprises a lens having an outer surface forming a part of the spherical housing and an inner surface, the curvatures of the outer surface and the inner surface selected to provide a desired degree of magnification or aberration correction of light.

As pertaining to claim 16, Fan discloses wherein the eyepiece assembly further comprises a lens having an outer surface forming a part of the curved housing and an inner surface, the curvatures of the outer surface and the inner surface selected to provided a desired degree of magnification or aberration correction of light on the axial optical path (col. 13, lines 35-65; Fig. 22, 25).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the housing features of Fan with those of Amafuji, Rallison, Ronzani and Robertson.

The suggestion/motivation for doing so would have been to provide because it allows for increased or improved observation in which there is a higher luminance and definition of the picture being observed by the user. Claim 16 is dependent on claim 13 and is rejected on the same basis and what is stated above

As pertaining to claim 17-18, Fan discloses the device of claim 13, wherein the curved housing includes an internal surface having a curvature selected to form a lens (Fig. 19, 22). Fan states that any lens system can be incorporated into the optical system (col. 13, lines 49-65), therefore as a design choice any lens system would work with this system. Claims 17 and 18 are dependent on claim 13 and are rejected on the same basis and what is stated above.

As pertaining claim 20, it would be obvious, the device of claim 13, wherein the curved housing is coated with a scratch resistant coating or an antireflection coating. Some materials,

which would be used to make the housing, would not need an antireflection coating because light does not reflect off them, i.e. ABS plastic, a dark-dull paint etc. Furthermore, the same can be said of the scratch resistant coating because in essence this coating does not really prevent scratches from happening it just allows or depends how deep the scratch occurs, it would also depend on how many coats would have to be put to allow for the scratches to be buffed out, but more coatings would be some extra weight being put on the eyepiece assembly. Claim 20 is dependent on claim 13 and is rejected on the same basis and what is stated above.

8. **Claim 21-25, 28-29 and 43** are rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji and Rallison in view of Uehara et al. (hereinafter "Uehara") US 6,243,208 B1.

As pertaining to claim 21, Amafuji and Rallison disclose what has been previously stated above.

As pertaining to claim 21, they do not disclose the eyepiece assembly having a solid optical material having an external surface and an internal reflective surface, the material having an index of refraction so the light incident on the external surface is refracted as the light propagates into the material and is reflected off the internal surface.

As pertaining to claim 21, Uehara discloses an image system B1, which has a material of external surfaces, and internal reflecting surfaces. It is obvious that there is an index of refraction because the light bends as it enters and exits the image system as shown by Figure 1, and the light is reflected throughout the image system B1.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the image display of Uehara with image display of Amafuji and Rallison.

The suggestion/motivation for doing so would have been to provide a better eye assembly for producing more efficient images that would entitle the image to have higher contrast, resolution, luminance and cleanliness.

As pertaining to claim 22, Uehara discloses the device of claim 21, wherein the reflective surface comprises a reflective film (col. 10, lines 47-50). It would be obvious that this film could be a metal, vacuum deposited dielectric coating or a holographic coating or film. Claim 22 is dependent on claim 21 and is rejected on the same basis and what is stated above.

As pertaining to claim 23, Uehara discloses the image system B1 to have spherical and ashperical surfaces (col. 9, lines 30-38; col. 10, lines 32-50). Claim 23 is dependent on claim 21 is rejected on the same basis and what is stated above.

As pertaining to claim 24, Uehara discloses the image system B1 to have concave pieces, which can be construed as parabolic (col. 10, lines 32-50; fig. 1). Claim 24 is dependent on claim 21 is rejected on the same basis and what is stated above.

As pertaining to claim 25, it would be obvious the device of claim 21, wherein the reflective surface is partially transmitting and the eyepiece assembly further includes a section adjacent the reflective surface selected to reduce refraction of ambient light passing through the reflective surface into the solid optical material. It is obvious because ambient light plays a major role when it comes to the image being displayed. Excess ambient light would cause the picture to become distorted, i.e. not clear, bad resolution, bad contrast. Therefore, it would be obvious that eye assembly have some way to reduce the refraction of ambient light because the user would want to view or see the image as the best as it can be. Claim 25 is dependent on claim 21 and is rejected on the same basis and what is stated above.

As pertaining to claim 28, Amafuji teaches the device of claim 21, further comprising a housing, the projection system disposed within the housing, circuits and wiring in electrical

communication with the projection system disposed within the housing, and the support fixture attached to the housing (Fig. 5-6). Claim 28 dependent on claim 21 and is rejected on the same basis and what is stated above.

As pertaining to claim 29, Amafuji teaches the device of claim 28, further comprising a mounting device configured to mount the housing to a headband 203 (Fig. 5). Claim 29 is dependent on claims 21 and 28 and is rejected on the same basis and what is stated above.

As pertaining to claim 43, Amafuji teaches a computer in communication with the display device of claim 21 (col. 1, lines 4-7). Claim 43 is dependent on claim 21 and is rejected on the same basis and what is stated above.

9. **Claims 26-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji, Rallison and Uehara as applied to claim 21 above, and further in view of Ronzani.

As pertaining to claims 26-27, Amafuji, Rallison and Uehara disclose what has previously been stated above.

As pertaining to claims 26-27, they do not disclose the eyepiece assembly disposed in a curved or spherical housing.

As pertaining to claims 26-27, Ronzani discloses a HMD display in which the eyepiece assembly is hollow and spherical and therefore curved (figs. 1-9).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the curved eyepiece assembly of Ronzani with that of Amafuji, Rallison and Uehara.

The suggestion/motivation for doing so would have been to provide for a better eyepiece assembly which can be encased or housed to allow for a better image to be produce without any outside distractions or interferences, i.e. wind, rain, snow etc. Claims 26-27 are dependent on claim 21 and are rejected on the same basis and what is stated above.

10. **Claims 30-32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji, Rallison, Ronzani, Robertson and Uehara as applied to claim 1 or 13 or 21 or 28 above, in view of Lebby et al. (hereinafter "Lebby"), US 5,469,185.

As pertaining to claims 30-32, Amafuji, Rallison, Ronzani, Robertson and Uehara disclose what has previously been stated above. Furthermore, Amafuji discloses the microphone 208a is mounted on a boom 208b and both are mounted on a headband 203. Amafuji does not disclose the microphone supported by the housing, microphone mounted on a boom and an earpiece supported by the housing.

As pertaining to claims 30-32, Lebby discloses head mounted display in which the microphone 54 is mounted on a boom, and an earpiece 52, in which both of these are supported by the housing 56 (Fig. 4).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the HMD design of Lebby with the HMD Amafuji, Rallison, Ronzani, Robertson and Uehara.

The suggestion/motivation for doing so would have been to provide a different design that is not necessarily better but maybe less cumbersome, to when the user is putting the apparatus on. Claims 30-32 are dependent on claims 1, 13, 21 and 28 and are rejected on the same basis and what is stated above.

11. **Claims 33-35** are rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji, Rallison, Ronzani, Robertson and Uehara as applied to claim 1 or 13 or 21 or 28 above, in view of Fan et al (hereinafter "Fan"), US 5,815,126.

As pertaining to claims 33-35, Amafuji, Rallison, Ronzani and Uehara disclose what has previously been stated above. Furthermore, Amafuji discloses the microphone 208a is mounted on a boom 208b and both are mounted on a headband 203. The examiner feels that

these claims and the preceding claims are of a design choice because they do not add any benefit to how the apparatus functions. However, with that in mind Amafuji does not disclose the housing attached to a boom, in which the boom is attached to the headband, a microphone support by the headband and an earpiece supported by the headband.

As pertaining to claims 33-35, Fan discloses many different designs in which there could be many different combinations to how each of the following could be attaché. The housing 1100 can be attached to a boom as shown on Figs. 32A-32B and 33 and they are attached to a headband, the microphone and earpiece can be attached to the headband or not as shown in Figs. 32A, 33 and 34A.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the designs of Fan with Amafuji, Rallison, Ronzani, Robertson and Uehara.

The suggestion/motivation for doing so would have been to provide different designs choices to allow for a less cumbersome apparatus. Claims 33-35 are dependent on claims 1, 13, 21 and 28 and are rejected on the same basis and what is stated above.

12. **Claim 36** is rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji and Rallison as applied to claim 1 above, in view of Newman et al. (hereinafter "Newman"), US 5,844,824.

As pertaining to claim 36, Amafuji and Rallison disclose what has been previously stated above. Also, Amafuji discloses that the display system can have a wireless modem (col. 12, lines 65-67; col. 13, lines 1-14). They do not disclose the display system can be in communication with a cellular phone.

As pertaining to claim 36 Newman discloses that a head mounted display can be in communication with a cellular phone (col. 9, lines 43-67; col. 10, lines 1-67 and col. 1, lines 1-42).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the communication capabilities of Newman with Amafuji and Rallison.

The suggestion/motivation for doing so would have been provide the display system with another communication device, in this case a cellular phone so as maybe to do multi-tasking with a phone or something else and this also allows the image to be magnified without causing strain on the user's eye. Claim 36 is dependent on claim 1 and is rejected on the same basis and what is stated above.

13. **Claim 38** is rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji and Rallison as applied to claim 1 above, in view of Horiuchi, US 6,304,234 B1.

As pertaining to claim 38, Amafuji and Rallison disclose what has been previously stated above. Also, Amafuji discloses that the display system can have a wireless modem (col. 12, lines 65-67; col. 13, lines 1-14). They do not disclose the display system can be in communication with a personal digital assistant (PDA).

As pertaining to claim 38, Horiuchi discloses that the head mounted device used can be in communication with a PDA to allow the user to see a bigger image of the screen of the PDA (col. 1, lines 4-9; col. 3, lines 19-23; Fig. 1A).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the communication capabilities of Horiuchi with Amafuji and Rallison.

The suggestion/motivation for doing so would have been to provide another way to communicate with a portable device, in this case a PDA. This also allows for multi-tasking to take place, as in input phone numbers, names, play games, etc. but with a magnified image

without causing strain on the user's eyes. Claim 38 is dependent on claim 1 and is rejected on the same basis and what is stated above.

14. **Claim 39** is rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji, Rallison, Ronzani and Robertson as applied to claim 13 above, in view of Newman et al. (hereinafter "Newman"), US 5,844,824.

As pertaining to claim 39, Amafuji, Rallison, Ronzani and Robertson disclose what has been previously stated above. Also, Amafuji discloses that the display system can have a wireless modem (col. 12, lines 65-67; col. 13, lines 1-14). They do not disclose the display system can be in communication with a cellular phone.

As pertaining to claim 39, Newman discloses that a head mounted display can be in communication with a cellular phone (col. 9, lines 43-67; col. 10, lines 1-67 and col. 1, lines 1-42).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the communication capabilities of Newman with Amafuji, Rallison, Ronzani and Robertson.

The suggestion/motivation for doing so would have been provide the display system with another communication device, in this case a cellular phone so as maybe to do multi-tasking with a phone or something else and this also allows the image to be magnified without causing strain on the user's eye. Claim 39 is dependent on claim 13 and is rejected on the same basis and what is stated above.

15. **Claim 41** is rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji, Rallison, Ronzani and Robertson as applied to claim 13 above, in view of Horiuchi, US 6,304,234 B1.

As pertaining to claim 41, Amafuji, Rallison, Ronzani and Robertson disclose what has been previously stated above. Also, Amafuji discloses that the display system can have a wireless modem (col. 12, lines 65-67; col. 13, lines 1-14). They do not disclose the display system can be in communication with a personal digital assistant (PDA).

As pertaining to claim 41, Horiuchi discloses that the head mounted device used can be in communication with a PDA to allow the user to see a bigger image of the screen of the PDA (col. 1, lines 4-9; col. 3, lines 19-23; Fig. 1A).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the communication capabilities of Horiuchi with Amafuji, Rallison, Ronzani and Robertson.

The suggestion/motivation for doing so would have been to provide another way to communicate with a portable device, in this case a PDA. This also allows for multi-tasking to take place, as in input phone numbers, names, play games, etc. but with a magnified image without causing strain on the user's eyes. Claim 40 is dependent on claim 13 and is rejected on the same basis and what is stated above.

16. **Claim 42** is rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji, Rallison and Uehara as applied to claim 21 above, in view of Newman et al. (hereinafter "Newman"), US 5,844,824.

As pertaining to claim 42, Amafuji, Rallison and Uehara disclose what has been previously stated above. Also, Amafuji discloses that the display system can have a wireless modem (col. 12, lines 65-67; col. 13, lines 1-14). They do not disclose the display system can be in communication with a cellular phone.

As pertaining to claim 42, Newman discloses that a head mounted display can be in communication with a cellular phone (col. 9, lines 43-67; col. 10, lines 1-67 and col. 1, lines 1-42).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the communication capabilities of Newman with Amafuji, Rallison and Uehara.

The suggestion/motivation for doing so would have been provide the display system with another communication device, in this case a cellular phone so as maybe to do multi-tasking with a phone or something else and this also allows the image to be magnified without causing strain on the user's eye. Claim 42 is dependent on claim 21 and is rejected on the same basis and what is stated above.

17. **Claim 44** is rejected under 35 U.S.C. 103(a) as being unpatentable over Amafuji, Rallison and Uehara as applied to claim 13 above, in view of Horiuchi, US 6,304,234 B1.

As pertaining to claim 44, Amafuji, Rallison and Uehara disclose what has been previously stated above. Also, Amafuji discloses that the display system can have a wireless modem (col. 12, lines 65-67; col. 13, lines 1-14). They do not disclose the display system can be in communication with a personal digital assistant (PDA).

As pertaining to claim 44, Horiuchi discloses that the head mounted device used can be in communication with a PDA to allow the user to see a bigger image of the screen of the PDA (col. 1, lines 4-9; col. 3, lines 19-23; Fig. 1A).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the communication capabilities of Horiuchi with Amafuji, Rallison, and Uehara.

The suggestion/motivation for doing so would have been to provide another way to communicate with a portable device, in this case a PDA. This also allows for multi-tasking to take place, as in input phone numbers, names, play games, etc. but with a magnified image without causing strain on the user's eyes. Claim 44 is dependent on claim 21 and is rejected on the same basis and what is stated above.

Response to Arguments

18. Applicant's arguments filed 28 July 2003 have been fully considered but they are not persuasive. As pertaining to independent claim 1, Amafuji discloses an elongated member of the support fixture that encompasses a first end and, in which the projection system is attached at and the second end, in which the eyepiece assembly is attached to. Rallison is used only to replace the off-axis eyepiece of Amafuji with an on-axis or axial system.

Applicant's arguments with respect to claims13 and 21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Bullister, US 5,886,735. Bullister teaches a video telephone headset.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Michael J. Moyer** whose telephone number is **(703) 305-2099.** The examiner can normally be reached Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Steven Saras**, can be reached at **(703) 305-9720.**

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to: (703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the **Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.**

Michael J. Moyer
Examiner
Art Unit 2675

MJM
August 10, 2003

CHANH NGUYEN
PRIMARY EXAMINER